Choice in a World of Scarcity

- Lecture 2 outline
  - Budget Constraints and Choices
  - Repeat ideas
    - Opportunity costs
    - Marginal costs
    - Sunk costs
  - Models in economics
    - The production possibility frontier.

The Budget Set for Consumers

- Wants are insatiable. But as the Rolling Stones remind us, we can’t always get what we want. Why?
  - There is a budget constraint. Our incomes are limited.
  - In most of our examples we are going to simplify things by considering only two goods (though the theory is easy to generalize). The budget constraint can be written as:

\[ Income = P_X \times X + P_Y \times Y \]

- The slope of the budget constraint:
  \[ Slope = -\frac{P_X}{P_Y} \]

## Budget Constraint Examples

\[ C = 10 - \frac{1}{2}F \]
\[ C = 5 - \frac{1}{2}F \]

- $100/week to spend on food and clothes.
  - Food costs $5/meal
  - Clothes cost $10/per

- Suppose income falls 50% and prices stay the same

<table>
<thead>
<tr>
<th>Affordable</th>
<th>Unaffordable</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>20 Food</td>
<td>20 Food</td>
</tr>
</tbody>
</table>

- Slope of both constraints is -1/2

## The Budget Constraint and Price Changes

- Suppose food prices double, so income = $100/wk; food costs $10 meal (was $5); and clothes cost $10 per article.

Original BC: \[ C = 10 - \frac{1}{2}F \]
New BC: \[ C = 10 - F \]
What choices will you make?

Everything else?

No, you can’t afford this Consumption bundle.

No, you can afford more.

Chocolate chip cookies.

Budget constraints can be used to analyze many things.

Income?

Weekly hours of work: slope is the wage rate, $20/hr.

Income = 1,600 – 20(80 – hours worked per week).

Income = 1,600 – 20(hours of leisure).

Leisure Hours?

Labor Hours = 80.

Saving (or the intertemporal consumption decision):
slope is the interest rate, here 50% in the future.

\[ C^T = 30,000 - 1.5C^F \]

Suppose the interest rate falls to 0%.

\[ C^T = 20,000 - C^F \]

Opportunity costs, marginal decision-making, and sunk costs.

- Our “Economics in the News” discussion gave one example of opportunity costs.
- The textbook has a fine discussion of airport security: this is an example where the opportunity costs imposed by the policy are enormous.
- Diminishing marginal utility.
- As I consume more and more chocolate chip cookies, the utility I get from each cookie declines, after a point.
- Similarly for studying economics.
- Diminishing returns plays a fundamental role in understanding the show of the production possibilities frontier.
- Sunk costs
- Costs that were incurred in the past and cannot be recovered, and therefore should not affect current decisions.
The escalator puzzle

- Taking a step has a certain cost, in terms of energy expended.
  - The cost is the same whether you are on stairs or an escalator.
- Taking a step has a certain benefit: you are one step closer to where you want to go.
  - The benefit is the same whether you are on stairs or an escalator.
  - If the costs and benefits are the same, why do people (often) stand still on escalators but not on stairs?
- The key to resolving the puzzle requires you to correctly define benefits: The benefits should not be measured in distance, they should be measured in time.
  - A step on stairs saves you more time than a step on an escalator.
  - A corollary: People should also walk more slowly on escalators than stairs...

Models in Economics:

- **A model** is a simplified representation of a real situation that is used to better understand real-life situations.
  - Economists make extensive use of models. This course develops simple models of microeconomic behavior.
  - A good model captures the essence (or an important aspect) of the phenomenon being studied.
  - Alternatively, they may describe the way that people (firms, governments or other economic actors) should behave.
- **We start with the production possibility frontier (PPF).**
  - The PPF illustrates the trade-offs facing an economy that produces only two goods. It shows the maximum quantity of one good that can be produced for any given production of the other.

A Classic PPF: The Guns and Butter Tradeoff

<table>
<thead>
<tr>
<th>Guns</th>
<th>Butter</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>95</td>
</tr>
<tr>
<td>20</td>
<td>85</td>
</tr>
<tr>
<td>30</td>
<td>60</td>
</tr>
</tbody>
</table>

The PPF and Opportunity Costs (i.e., diminishing marginal returns)

- Producing the first 60 butters... requires 10 guns
- Producing the next 25 butters... requires 10 guns
- It becomes increasingly expensive to produce additional butter, or guns
The PPF, production efficiency, and allocative efficiency

Production efficiency: you can’t produce more of one good without producing less of another

Allocative efficiency: the point on the PPF that society most desires

Economic growth results in an outward shift of the PPF because production possibilities are expanded.